The social determinants of food purchasing practices: who chooses price-before-health, taste-before price or organic foods in Australia?

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Abstract
This paper focuses on the extent to which cost, taste and health considerations impact food purchasing practices in Australia. We focus on consumer considerations of food prices before their health or nutritional qualities when purchasing food (i.e. price-before-health), purchasing organic foods and purchasing foods which are more expensive because they taste better (i.e. taste-before-price). Data were gathered from a national computer assisted telephone survey of 1109 randomly sampled householders. Data were analysed using multiple logistic regression analysis. 88% of respondents considered the taste of food before its price, with females and people on higher incomes more likely to do so. 52% of respondents said that they considered the price of food before its health and nutritional benefits, with males, younger people and people with lower educational qualifications more likely to do so. 49% said that they purchase organic food, with people with 1 child, full-time employed and people never married more likely to do so. Overall, gender, income, education, work status, age and family size are all important predictors of food purchasing practices in Australia.

Keywords
Food; taste, price; organic; socio-demographics; survey; logistic regression; Australia

Introduction

This paper focuses on the extent to which cost, taste, health and ethical considerations impact food purchasing practices (referred to as FPP throughout this paper) in Australia. The specific FPP considered in this paper are: considering food prices before their health or nutritional qualities when purchasing food (i.e. price-before-health); purchasing organic foods (may be related to health and ethical issues); and purchasing foods which are more expensive because they taste better (i.e. taste-before-price). The paper provides data from a national survey in Australia about both the prevalence and social determinants of these FPP. By social determinants, we mean the relative effects of factors such as gender, age, income, social class, household size and composition, and educational attainment on FPP. Our paper is timely given the rising food costs, increased focus upon prevention of chronic disease through adoption of healthy diet, and the ethical and environmental considerations in relation to food production and transport. Thus the need to understand changing consumer food-related practices has moved to centre stage in public health policy. In learning the details of everyday dynamics of FPP, this paper will also shed light on the 'complex range of factors which operate to produce and/or sustain 'unhealthy' lifestyles and (by extension) overweight and obesity' [1].

FPP are embedded in the everyday details of life – what French anthropologist Bourdieu [2, 3] refers to as the habitus, which is shaped by sociocultural and economic settings. Food and food practices are not only symbolic of, but are deeply engrained bodily performances of identity, class and social relations, and are transmitted, learned and reproduced in families and across generations. These bodily ways of being and knowing are largely unconscious and taken-for-granted. However, Sayer undertakes a critical analysis of habitus, arguing that habitus is more flexible and malleable than Bourdieu originally asserted [4]. Indeed, Sayer argues that it is difficult to see how 'resistance' would be possible if individual identity are largely a product (both complying with, and complicit in the production of their habitus) of their social and cultural milieu. Bourdieu [2] argues that each individual is born into particular cultural and class meaning systems that code the body in ways of 'standing, speaking and thereby of feeling *and* thinking'(p32). Therefore, the 'food practices' within this paper are not simply individual 'behaviours', but represent an inter-relationship between the individual and the wider classed and gendered structures within society.

Consideration of food costs as a FPP

Cost has been identified as a major consideration in food choice [5-7]. As in many other countries, Australian consumers have recently had to accommodate increases in costs of basic food [8]. During the financial year 2007-8, overall food prices rose 3.9%, while some basic food prices rose more sharply: cheese by 14.2%, milk by 12.1%, poultry by 11.0% and bread by 6.8% [9]. Food cost plays a significant role in mediating food choice among low socio-economic status (SES) groups [10, 11], who often have to cut back on food spending to make room for other essentials such as housing and utilities [12-15], leading to decreased food security [16].

Food insecurity is associated with obesity [17, 18] and obesity related disease [19, 20]. These elevated rates of obesity among the food insecure is thought to result principally from increased consumption of foods high in fat and or sugar that are typically cheaper, more available, heavily marketed and simpler to prepare than healthy alternatives [6, 7]. Furthermore, the health consequences of food insecurity go beyond obesity and include nutrient inadequacy [21], self reported health [20] and compromised child health [17]. Data collected in South Australia estimates the food insecurity rate to be approximately 7% [22]. However, this increases among at-risk groups including: unemployed (11.3%), rental households (15.8%) [23], those identifying as Aboriginal or Torres Strait Islander (23%) [24] and recently arrived refugees (71%) [25].

There are a number of recognised social determinants of food insecurity, such as the unaffordability of healthy food for lower SES groups [26, 27], rising food prices in Australia [8], higher food prices and greater density of unhealthy food options in socially disadvantaged areas [28, 29], employment status [30], educational attainment [31] and access to private transport [32]. We assess a number of these variables, in addition to others, when examining the nature and extent for FPP in Australia.

Purchasing organic food as a FPP

The market for organically produced foods is high within the developed world. In Australia, the organic food market increased to $947 Million in 2009, with sales up 50% from the previous two years [33]. In the UK, organic food sales were over £2 Billion in 2007, but reduced to £1.8 Billion by 2009, possibly due to the economic downturn [34]. Organic food tends to be more expensive than non-organic food, and evidence suggests that consumers are willing to pay the higher price for organic foods based on their perceived health, nutritional and taste benefits [35]. Indeed, a number of studies have found that consumers perceive organic food to be both healthier and of higher nutritional quality than non-organic food [36-38]. Of particular concern to consumers is the use of pesticides. Canadian research has found that women, people aged 18 to 24 years and from larger households are more concerned with regulation of pesticide use [39]. Conversely, Australian research found significantly less concern with pesticide use among 18 to 24 year olds than older participants [40]. Two recent systematic reviews found however that there is no evidence of nutrition-related health benefits resulting from the consumption of organic food in comparison to non-organic food [41, 42]. These systematic reviews did not undertake meta-analyses due to methodological diversity of studies examined and did not examine the public health or environmental benefits of organic food. Nevertheless, the literature suggests that consumer perceptions about the health benefits of organic food, often promulgated by organic food companies, leading to increased willingness to pay for organic products may be unfounded.

Taste and food choice

A final consideration is taste. Taste has been identified as being a significant contributor to food choice [5], particularly for younger people who have less immediate concerns with health [43]. Cultural and gender differences have been noted in the relative importance placed upon taste and health. Participants from countries such as the US [44] and UK [45] place greater importance upon health concerns and less upon the pleasure of eating than participants in countries such as France, Belgium and Finland [44, 45]. Likewise, women generally place less concern upon the pleasure of eating than men also demonstrating greater concern with the healthiness of food [44, 45].

This paper provides data from a national survey in Australia on the prevalence and socio-demographic predictors of three FPP: consideration of price-before-health; purchasing organic food; and consideration of taste-before-price.

Method

This study was primarily concerned with identifying the nature and level of consumer trust in the Australian food supply [46-48], however our national survey also provided a unique opportunity to assess the prevalence and social determinants of FPP.

Households in Australia with a telephone connected and the telephone number listed in the Australian electronic white pages were eligible for random selection in the sample for this study. All selected households were sent an approach letter on Flinders University letterhead which detailed the purpose of the study and advised that the household would be receiving a phone call for an interview. The person, aged 18 years or over, who was last to have a birthday, was randomly selected within each contacted household to complete the survey.

In order to test question formats and sequence, and to test survey procedures, a pilot study of 52 randomly selected households was conducted prior to the main survey. Information obtained from the pilot was used to improve the questionnaire if needed.

Professional interviewers from a contracted agency conducted the study using Computer Assisted Telephone Interview (CATI) methodology from October to December 2009. A minimum of 10 call-backs were made to telephone numbers selected, to interview household members and different times of the day or evening were scheduled for each call-back. Non-contactable or responding persons were not

replaced with other respondents. Each interview took an average of 14.5 minutes to complete, and ten percent of each interviewer's work was validated by the interviewer's supervisor for quality purposes.

Of the initial sample of 4,100, a sample loss of 1,408 occurred due to non-connected numbers (1,060), non-residential numbers (135), ineligible household (139) and fax/modem connections (74), leaving 2692 phone numbers eligible for survey phone calls. After refusals, terminated interviews, non-contactable households, deaths, unavailable respondents and respondents who did not speak English, 1109 interviews were completed. This generated an overall sample response rate of 41.2%.

To address the issue of assessing FPP, three survey items were examined, all of which were framed as follows: *'I will now ask you to consider your food purchasing habits in general. This includes green grocers, sandwiches, restaurants, as well as other take away outlets.'* The specific survey questions were:

- Do you buy products that are a bit more expensive if the taste is better?
- Do you buy organic foods?
- Do you consider food prices before health and nutritional qualities?

Respondents were provided with response options assessing the frequency of the aforementioned items, ranging from 'Often', 'Sometimes' and 'Seldom' to 'Never'. 'Don't know' responses as well as refusals to answer a particular question were recorded as further response options.

One of the obvious limitations of the price-before-health and taste-before-price variables are that we do now know how much "a bit more" is in relation buying tastier food and we do not know exactly how much people are willing to consider when thinking about the health and nutritional qualities of food. However, the purpose of this paper is not to provide an econometric analysis or contingent valuation of food vis a vis health or taste, but to paint a picture of the types of people more likely to consider price-before-health, taste-before-price and purchasing organic foods in Australia.

Data analyses

Demographic variables included in the analyses were age, sex, number of people in the household, number of children under 18 years of age in the household, marital status, work status, education, annual household income, the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD) as well as the Accessibility/Remoteness Index of Australia (ARIA). However, only the statistically significant predictor variables are presented in Table 3.

All statistical analyses were carried out using SPSS version 17.0. As samples such as these may be disproportionate with respect to the population of interest, weighting was used to compensate for differential non-response and correct unequal sample inclusion probabilities. In order to reflect the Australian population structure 18 years and over, the data were weighted by age and sex reflecting the Australian Bureau of Statistics 2007 Estimated Residential Population.

For the FPP outcome variables (i.e. the three items addressing the prevalence of FPP), dichotomization procedures were also applied: 'Often' and 'Sometimes' responses were added together to create one level of the outcome variable ('Often/Sometimes'), while responses indicating the respondent to perform a particular action 'seldom' or 'never' were combined to generate the second outcome level. Responses in the form of 'Don't know' and refusals to answer a question were not included in the present analysis.

All demographic predictor variables were entered into the analysis as categorical variables, the individual levels of which are summarized in Table 1. Bivariate logistic regression analyses were performed to examine the relationship between the individual demographic predictors and the various food purchasing habits. Only items showing an association at the $p<0.25$ level were entered into multiple binary logistic regression analyses [49]. Following suggestions by Field [50], for the purposes of the present investigation the method of choice for conducting regression analyses was to enter relevant predictor variables in one block rather than stepwise procedures. Predictor variables that were entered into the

model but returned as not significant were in turn tested against models containing only significant predictor variables. This process allowed for the comparison of several models, resulting in a final model containing only variables, which significantly contributed to the model fit. For each outcome variable, predictor variables included in the regression model were checked for multicollinearity.

Results

Table 2 presents descriptive analyses of the responses to each of the three FPP. Of the respondents 88% said that they 'Sometimes/Often' pay more for food products if they taste is better (n=968) compared to 12% (n=130) who said they 'Never/Seldom' pay more if the taste is better. Responses were more evenly distributed for the survey item addressing the purchase of organic products (53% (n=575) 'Never/Seldom' versus 47% (n=513) 'Sometimes/Often') and whether participants considered food prices before health and nutritional qualities (48% (n=522 'Never/Seldom' versus 52% (n=573) 'Sometimes/Often').

Demographic predictors of food purchasing practices

Results of the multivariate regression analyses have been organized by demographic predictor variables. The fit indices of the individual regression models and parameter estimates are reported in Table 3.

Sex

Sex emerged as a strong predictor for various FPP, namely paying more for food if the taste is better and considering prices before quality. Female respondents were over twice as likely as males to pay more for food if it tasted better (OR=2.2, p<.001) and 40% less likely than their male counterparts to state that they 'Sometimes/Often' consider food prices before quality (OR=0.6, p<.001). This however is in line with the aforementioned findings as it suggests that women are more likely than men to prioritize food quality before price.

Age

Age was a predictor of respondents putting price before quality. Survey participants between 45 and 59 years of age were 40% less likely to report considering price before quality (OR=0.6, p<.01) than the youngest respondents). The oldest age cohort (i.e. individuals aged 60 years and above) were half as likely put price before quality (OR=0.5, p<.001) than their under 30 counterparts.

Children in the household

The number of children under 18 years cohabiting in the same household was a factor which significantly predicted buying organic products. For buying organic products, the likelihood of doing so more frequently was found to be 50% higher for respondents with one child compared to respondents without children (OR=1.5, p<.05).

Education

The only FPP for which education was found to be significant was the frequency with which respondents reported to consider price before the health or nutritional quality of food. Respondents with a degree or higher were 30% less likely to say that they 'Sometimes/Often' consider price before quality compared to respondents with secondary schooling or lower (OR=0.7, p<.05), indicating that they are more likely to think about the health and/or nutritional benefits of food before their cost.

Household income

The only FPP for which annual household income was found to be significant was the frequency with which respondents reported to pay more for food if warranted by better taste. Relative to the lowest household income group (<$30,000 per annum), respondents between $30,001 and $60,000 were 90% more likely to state that they 'Sometimes/Often' pay more for food if the taste is better (OR=1.9, p<.05), while odds ratios were markedly higher for those between $60,001 and $100,000 (OR=5.5, p<.001) and

even more so for those with more than $100,000 (OR=7.9, p<.001). The general pattern discernable from the odds ratios observed is that the more household income respondents had available, the more likely they were say that they 'Sometimes/Often' paid more for food if warranted by better taste.

Marital status
The only FPP for which marital status approached statistical significance as a predictor variable was buying organic products, where the likelihood for doing so 'Sometimes/Often' was 40% higher for individuals who have never been married compared with those who were married or living with a partner (OR=1.4, p<.05).

Work status
The frequency with which survey participants indicated to buy organic products was predicted by work status: Buying organic products 'Sometimes/Often' was 40% less likely for part-time employed or unemployed respondents (OR=0.6, p<.01) and 30% less likely for economically inactive respondents (OR=0.7, p<.05) compared to those in full time employment.

Limitations of the study
We acknowledge several weaknesses in this cross-sectional study. The self-report nature of the data collection could result in socially desirable responses or problems with recall. The response rate of nearly 41% is moderately acceptable for this type of survey but the potential for survey non-response bias is acknowledged. Response rates are declining in surveys based on all forms of interviewing (Curtin et al 2005; Groves 2006) as people have become more active in protecting their privacy (Ward et al 2010). The growth of telemarketing has disillusioned the community and diminished the success of legitimate social science research by means of telephone-based surveys. The use of a telephone as the mode of data collection could also result in bias. The EWP sampling strategy used in this research includes mobile phone with up to 8% of interviews undertaken on this medium. Although possible bias associated with EWP as the sampling frame is acknowledged, research on this issue has previously been undertaken [51, 52]. In addition, the growing use of mobile telephones has contributed to declining response rates for surveys administrated via telephone [53]. Notwithstanding, the strength of this study includes the random nature of the sample and the large number and variety of the associated variables.

Discussion
This research is based on a large scale randomly selected sample of the Australian adult population. It has highlighted the prevalence and social determinants of a range of FPP focusing on purchasing organic food, putting price-before-health, and putting taste-before-price.

Univariate and multivariate analyses have been undertaken on three specific FPP. Ten separate socio-demographic variables were assessed against each food practice and results indicate that sex, age, number of people in each household and education were the variables most likely to be included in the final multivariate models. Variables related to household income, work status and marital status were included in only one of the six regression models. IRSD, ARIA and number of people in the household were not included in any of the final multivariate models.

In terms of the prevalence of the FPP, the majority of respondents stated that they pay more for food if it tasted better (88%).This suggests the key importance of both food taste as food practices. It is surprising, given rising food costs and economic downturn, that so many people are prepared to pay more for food if it tastes better. Obviously people with the economic capital have always been able to 'buy taste' [2], but our finding of 88% suggests that it is more than just the high SES respondents who also have a taste-before-price food purchasing practice. That said, the multivariate regression model found that people with an income over $100,000 are almost 8 times more likely to say that they 'Sometimes/Often' purchased food in this manner as compared to people with an income less than $30,000. In addition, females were twice as likely as males to also have a taste-before-price food purchasing practice.

What we do not know from these data are 'how much would people be willing to pay for taste-before-price?', and 'for what types of food would this be the case?' It may be the case that people would be willing to pay more for tastier 'high end' food such as lobster and fillet steak, but less willing to do this for 'basic food' such as fruit and vegetables. It may also be the case that certain social groups will be more willing to pay extra for foods which maintain their 'distinction' within society [2]. None of these questions were dealt with in our study, but would be very worthy questions for future research.

Findings from our study were less consensual on the prevalence of responding 'Sometimes/Often' for the other two FPP: buying organic food (47%) and consider price before health and nutritional qualities of food (52%).

With reference to buying organic foods, it is interesting to note a 50% increase in households with one child, but then no significance for households with more children. We can understand the likelihood of purchasing organic food due to the perception and marketing about the nutritional and health benefits of organic food, even though the systematic reviews can find no evidence of this [41, 42]. In a study investigating the food purchasing habits of mothers, it was found that the foods mother's purchase for themselves was based on motivations of calorie content, availability, cost and time taken in preparation. In contrast, the motivations for the foods purchased for children were based on the long-term health and nutritional value [54]. However, the lack of association with families with two or more children does not conform to these ideas. It may be the case that the cost of organic food is prohibitive for many families with two or more children. Whilst there was no association with household income or education, as we may have expected, there was an association with work status, whereby people with part-time employment, unemployed or economically inactive were between 30-40% less likely to buy organic foods. It may be the case that people in full-time employment have both the economic and cultural capital required to purchase organic food. However, we would have also expected people with a degree and higher household incomes to be more likely to 'Sometimes/Often' purchase organic foods, given Bourdieu's argument that the purchasing of organic food can be understood as a form of symbolic and cultural capital [2] or elevated social status [55]. This is further elaborated by Guthman [56] who argues that organic food is viewed within the public imagination as "reflexive eating *par excellence*" (p.46), and therefore an activity which is concentrated within those with enough economic and cultural capital. Indeed, O'Neill [57] argues that since 'capital' (economic, cultural, symbolic etc) is a positional good, its value is depleted if greater numbers of people have access to it, since it becomes 'normal', and therefore various mechanisms are instigated in order to reduce access and keep it 'special'. However, our data do not wholly support this theory although further research is required.

In terms of the FPP related to considering the price of food before its health or nutritional quality (what we call price-before-health), there is a clear and consistent pattern whereby females, older people and more educated people were less likely to purchase food in this manner. In other words, they were more likely to consider the health and nutritional quality of food before its price. In broad terms, this fits with literature suggesting that quality rather than price is of paramount importance to consumers [58]. However, our findings reveal the heterogeneous nature of this, since men, younger people and people with lower educational qualifications were more likely to use price-before-health as a food purchasing decision. In our study, it seems that men are particularly price-sensitive, being less willing to pay for price-before-taste and more willing to consider price-before-health. This fits with literature about risk taking behaviours for both men and young people [59-61] but warrants further research and policy action in order to raise the awareness of the importance of considering nutrition and health when purchasing food. In terms of people with lower educational qualifications, this price-sensitivity may be a function of lower incomes in this group, but again may raise the need for research and policy action on food literacy.

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Table 1: Summary of categorical predictor variables.

Demographic predictor variables and associated levels	N (%)
Age	
Under 30 years	249 (22.5)
30-44 years	326 (29.4)
45-59 years	272 (24.6)
60 years and over	261 (23.5)
Sex	
Male	547 (49.3)

Female	562 (50.7)
People in household	
One person household	177 (16.0)
Two people in the household	346 (31.2)
Three to four people in the household	403 (36.4)
Five or more people in the household	183 (16.5)
Children under 18 in household	
None	674 (60.8)
One	166 (15.0)
Two	169 (15.3)
Three or more	100 (9.0)
Marital status	
Married/Living with partner	665 (59.9)
Separated/Divorced/ Widowed	149 (13.5)
Never married	293 (26.4)
Work status	
Full time employed	507 (45.7)
Part time employed/ Unemployed	228 (20.6)
Economically inactive (home duties, student, retired, etc.)	372 (33.6)
Education	
No schooling to secondary	490 (44.2)
Trade, certificate, diploma	345 (31.1)
Degree or higher	274 (24.7)
Annual household income	
Up to $30,000	212 (22.6)
$30,001-$60,000	231 (24.6)
$60,001-$100,000	253 (27.0)
$100,001 or more	243 (25.9)

Table 2: Summary of sample size and response patterns across food practice variables.

Survey item	'Never/ Seldom N (%)	'Sometimes/ Often' N (%)	Sample size N
Do you buy products that are a bit more expensive if the taste is better?	130 (11.9)	968 (88.1)	1098
Do you buy organic foods?	575 (52.8)	513 (47.2)	1088
Do you consider food prices before health and nutritional qualities?	522 (47.7)	573 (52.3)	1095

Table 3: Parameter estimates for regression models (χ^2, df, p), predictor variables (Wald χ^2, df, p) and individual predictor variable levels (OR, 95% CI, p), organized by FPP

	Pay more if taste is better	Buy organic foods	Price before quality
Model fit: χ^2 (df)	**64.87 (4)*** **	**27.9 (7)*** **	**35.33 (6)*** **
Sex (Male)	**12.56 (1)*** **		**12.35 (1)*** **
Female	2.2*** (1.4-3.4)		0.6*** (0.5-0.8)
Age (< 30 years)			**16.98 (3)** **
30-44 years			0.9 (0.6-1.2)
45-59 years			0.6** (0.4-0.9)
60+ years			0.5*** (0.4-0.8)
Children (None)		**8.14 (3)***	
One		1.5* (1.1-2.2)	
Two		1.1 (0.8-1.6)	
Three or more		0.8 (0.5-1.2)	
Education (≤secondary)			**6.09 (2)***
Trade, cert, diploma			0.9 (0.7-1.3)
Degree or higher			0.7* (0.5-0.9)
Household inc (<$30K)	**48.63 (3)*** **		
$30,001-$60,000	1.9* (1.2-3.1)		
$60,001-$100,000	5.5*** (2.9-10.4)		
>$100,001	7.9*** (3.9-16.0)		
Work status (Full time)		**9.72 (2)** **	
Part time/Unemployed		0.6** (0.5-0.9)	
Economically inactive		0.7* (0.5-0.9)	
Marital status (Married/ Living w. partner)		**7.92 (2)***	
Divorced/Sep./Widow		0.8 (0.5-1.2)	
Never married		1.4* (1.0-1.8)	

Note: ****p significant at <.001; ***p significant at .01; **p significant at .05; (*)trend for significance p<.08.*